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PATENT APPLICATION
Mo4976
MD-98-29-PU

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

#10
9/18/01
C. McKinney

APPLICATION OF	GROUP NO.: 2878
ROBERT N. HUNT ET AL	
SERIAL NUMBER: 09/222,092	EXAMINER: S. LEE
FILED: DECEMBER 29, 1998	
TITLE: AN IN-LINE PROCESS FOR MONITORING BINDER DOSAGE AND DISTRIBUTION ON A SURFACE AND APPARTUS USEFUL THEREFOR	

LETTER

Assistant Commissioner for Patents
Washington, D.C. 20231
Sir:

Enclosed herewith are three copies of a Corrected Appeal Brief in the matter of the subject Appeal. If any fees are involved in this transaction, please charge to our Deposit Account Number 13,3848.

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Respectfully submitted,

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Date

Lyndanne M. Whalen, Reg. No. 29,457
Name of applicant, assignee or Registered Representative

_____
Signature

September 7, 2001
Date

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CORRECTED APPEAL BRIEF

Assistant Commissioner for Patents

Washington, D.C. 20231

Sir:

This Brief, submitted in triplicate, is in response to the Notification of Non-Compliance With 37 CFR 1.192(c) dated August 16, 2001. This Brief is an Appeal from the Final Action of the Examiner dated February 7, 2001, in which the rejections of Claims 1-21 (all of the claims) were maintained.

I. REAL PARTY IN INTEREST

Each of the inventors has assigned his interest in this invention to Bayer Corporation. Bayer Corporation is therefore the real party in interest in this Appeal.

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Date

Lyndanne M. Whalen - Reg. No. 29,457
Name of applicant, assignee or Registered Representative

Signature

September 7, 2001
Date

II. RELATED APPEALS AND INTERFERENCES

There are no pending appeals or interferences of which Appellants are aware that would be affected by or have a bearing on the Board's decision in this Appeal.

III. STATUS OF CLAIMS

Claims 1-21, all of the claims, remain pending and are the subject of this Appeal.

IV. STATUS OF AMENDMENTS

No amendments to the claims have been made or requested subsequent to the Final Action of the Examiner.

V. SUMMARY OF THE INENTION

The present invention relates to an apparatus for determining binder dosage and distribution on a composite-forming material during production of a composite material and to a method for monitoring binder dosage and distribution on a substrate using this apparatus. This apparatus is composed of a UV light source (Figure 1, element 2 described at page 9, lines 4-25 of the specification) positioned so that the ultraviolet waves will come into contact with a substrate to which binder has been applied (Figure 1, element 3, described at page 9, line 26 to page 10, line 19 of the specification), a filter which blocks all but the visible light waves emitted by fluorescence of the binder (Figure 1, element 5, described at page 11, line 8 to page 12, line 13 of the specification), a lens for imaging the visible light onto a focal plane (Figure 1, element 6, described at page 12, lines 14-19 of the specification), a video camera which converts the visible light waves to an electronic signal (Figure 1, element 7, described at page 12, lines 20-25 of the specification) and a device capable of correlating that electronic signal to binder dosage and distribution (Figure 1, element 10, described at page 13, lines 12-24 of the specification).

VI. ISSUES

A. Claim 1 stands rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Appellants regard as the invention. The

specific basis for this rejection is that the language "applied contracted" in the last two lines of Claim 1 is vague and indefinite.

B. Claims 1, 2,6, 7, 9, 11-15, 19 and 20 stand rejected under 35 U.S.C. § 102(b) as being anticipated by DeVries et al (U.S. 5,532,817).

C. Claim 3 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over DeVries et al (U.S. 5,532,817) in view of Bolton et al (U.S. 4,824,209).

D. Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over DeVries et al (U.S. 5,532,817) in view of Duclos et al (U.S. 5,818,577).

E. Claims 5, 8, 10 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over DeVries et al (U.S. 5,532,817) in view of Burchill (EP 0,458,474).

F. Claims 16-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over DeVries et al (U.S. 5,532,817) in view of Barrera et al (U.S. 6,001,936).

G. Claim 21 stands rejected under 35 U.S.C. § 103(a) in view of DeVries et al (U.S. 5,532,817) in view of Krueger et al (U.S. 4,415,516).

VII. GROUPING OF CLAIMS

A. Claim 1 is the only claim rejected in ISSUE A.

B. None of Claims 1, 2, 6, 7, 9, 11-15, 19 or 20 will be argued separately in response to ISSUE B. Those claims therefore stand or fall together with respect to this issue.

C. Claim 3 is the only claim rejected in ISSUE C.

D. Claim 4 is the only claim rejected in ISSUE D.

E. None of Claims 5, 8, 10 or 18 will be argued separately in response to ISSUE E. Those claims therefore stand or fall together with respect to this issue.

F. Neither of Claims 16 and 17 will be argued separately in response to ISSUE F. Those claims therefore stand or fall together with respect to this issue.

G. Claim 21 is the only claim rejected in ISSUE G.

II. ARGUMENTS

A. Claim 1 is not vague and indefinite.

The specific language cited by the Examiner as the basis for this rejection is:

> ... e) a device capable of correlating images received by the video camera to binder dosage and distribution on the composite-forming material to which binder has been applied contacted by the ultraviolet waves emitted by the UV light source.

A claim is sufficiently definite if its metes and bounds can be determined by one of ordinary skill in the art.

Appellants maintain that one of ordinary skill in the art would readily appreciate from the specification, Figure 1 and the claim language itself that it is the image of the substrate contacted by the ultraviolet waves which is received by the video camera and correlated with binder dosage and distribution. The substrate contacted by the ultraviolet waves is "the composite forming material to which binder has been applied".

Appellants' Claim 1 does therefore satisfy the definiteness requirement of 35 U.S.C. § 112.

B. Claims 1, 2, 6, 7, 9, 11-15, 19 and 20 are not anticipated by DeVries et al

DeVries et al discloses a method for optically inspecting the resin portion of an article in which the article is exposed to a light source at a first wavelength and the emitted light (at a different wavelength) is measured. The resin being inspected must include a benzocyclobutene moiety having fluorescent properties.

The benzocyclobutene moiety is critical to the DeVries et al method. In fact, DeVries et al further teaches that:

> Not all reacted benzocyclobutene moieties will form resins which inherently fluoresce. Such non-fluorescing resins **are not within the scope of this invention**. (at column 3, lines 5-7)(emphasis added)

Appellants' binder need not employ the benzocyclobutene moiety critical to DeVries et al.

An invention which does not require a material taught to be critical by the prior art but which achieves the same type of objective as that achieved by the prior art, is not taught by that prior art in the manner necessary to support a proper rejection under 35 U.S.C. § 102. Appellants' invention measures binder dosage and distribution **without requiring the presence of a fluorescing benzocyclobutene moiety in the binder**. Appellants' invention is not therefore anticipated by DeVries et al.

The resin being inspected in the DeVries method is a fully formed polymer which coats a pre-formed substrate such as a silicon wafer. The binder used in Appellants' claimed invention is not a fully formed polymer. That binder is in intimate contact with composite-forming materials (such as wood strands) with which it is capable of reacting to form a composite material. The nature of the materials being inspected by the DeVries method is therefore significantly different from that being monitored in accordance with Appellants' claimed invention.

The Examiner has argued that Appellants' claims do not include a limitation requiring that the binder not be a fully formed polymer. (Final Office Action at page 10)

Appellants submit that one skilled in the art would readily appreciate that a binder would not function as binder for a composite-forming material unless that binder could react when contacted with the substrate sufficiently to bind the particulate material to form a composite material. Appellants' claims clearly require a composite-forming material to which a binder has been applied **during the production of composite materials**.

Appellants therefore maintain that their claims do include limitations which support their argument.

The DeVries et al method is used to inspect for surface characteristics such as thickness and concentration of the resin on the substrate surface. Appellants' method is used to determine the **distribution** and **dosage** of the reactive binder. DeVries et al does not employ a material which is reactive and dispersed throughout the sample being inspected. The teachings of DeVries et al can not therefore be construed as disclosing any means for determining the dosage and distribution of a material such as the binder required in Appellants' invention.

The Examiner has argued that Appellants' claims do not support this argument. (Final Office Action, page 10)

Appellants would note, for example, that Claim 1 recites "An apparatus for determining **binder** dosage and **distribution** during the production of composite materials". Appellants submit that such language does support their argument.

Appellants would further note that DeVries et al does not teach or suggest that the disclosed method could be used to inspect materials during actual production of those materials. In contrast, Appellants' apparatus and method are intended to be used during the actual production of the composite materials being monitored.

The Examiner has argued that Appellants' argument is not consistent with the teachings of DeVries et al at column 1, lines 15-17. (Final Office Action, page 11.)

Appellants would note that the teaching at the cited portion of the reference is a discussion of the background of the invention. DeVries et al does not include any teaching as to how to determine concentration of fluorescing species under production conditions.

It is indicated in the Office Action that DeVries et al discloses a means for correlating recorded images to binder dosage and distribution at column 7, line 50-column 8, line 3 and at column 8, lines 33-37. (Page 5, lines 5-6 of the Office Action dated September 20, 2000) Appellants respectfully disagree.

At the cited portions of the reference, DeVries et al discusses commercial automated systems in which an image is stored on a computer and that image is enhanced, magnified and compared to another image. None of the systems discussed by DeVries at columns 7 and 8, correlates binder dosage and distribution on particulate materials of the type used to produce composite materials with signals derived from a video image.

Indeed, DeVries et al teaches at column 8, lines 33-37 that the method disclosed therein can be used to determine "thickness of the resin, coating uniformity, particulate contamination, pin holes, gels, bubbles, clearing of vias, cracking, blisters, wrinkles and delamination". Distribution of a binder on particulate materials, wood strands, etc. is clearly "missing" from the types of determinations which DeVries et al teaches to be possible with the disclosed method.

In response to this argument, the Examiner has maintained that the determination of coating uniformity of DeVries et al is equivalent to binder distribution in a composite-forming material. (Final Office Action at pages 11-12)

Appellants submit that there is no teaching in the DeVries et al reference which supports this conclusion. Further, one skilled in the art would hardly consider the surface coating of DeVries to be equivalent to binder which needs to be distributed evenly throughout the composite-forming material if that composite is to maintain its integrity (rather than fall apart).

A key feature of Appellants' invention is the device for correlating video images to binder distribution and dosage on composite-forming material to which that binder has been applied during actual production of the composite material. This feature is not taught or suggested by DeVries et al. This key feature of Appellants' invention which is "missing" from the teachings of DeVries et al is required in each of the embodiments of the invention claimed in Claims 1, 2, 6, 7, 9, 11-15, 19 and 20. The teachings of DeVries et al do not therefore anticipate or render obvious Appellants' invention as claimed in Claims 1, 2, 6, 7, 9, 11-15, 19 and 20.

Appellants would further note that DeVries et al requires use of a UV light source at a specific wavelength. Appellants' claimed apparatus is not limited to use of UV light at one wavelength. UV light having a range of wavelengths may be used in the present invention.

DeVries et al does not teach or suggest that UV light having a range of different wavelengths could be used in the disclosed method. The teachings of DeVries et al do not therefore anticipate Appellants' claimed invention.

C. Claim 3 is not obvious in view of the combined teachings of DeVries et al and Bolton et al.

The DeVries et al reference has already been discussed and distinguished from the claimed invention.

In short, DeVries et al (1) requires a benzocyclobutene moiety which fluoresces which moiety is not required in Appellants' invention and (2) does not teach or suggest an apparatus having the device for correlating collected video

images to binder dosage and distribution on a composite-forming material during a process for the production of composite materials.

Bolton et al discloses a light source assembly. Bolton et al does not teach or suggest anything with respect to correlating visible light to binder dosage or distribution. Nor does Bolton et al teach that the disclosed light assembly would eliminate the need for the benzocyclobutene moiety critical to the DeVries et al method.

The teachings of Bolton et al can not therefore be construed in any manner which would suggest (1) the correlation means required in Appellants' invention or (2) that the benzocyclobutene moiety could be omitted.

Neither Bolton et al nor DeVries et al teaches key features of Appellants' claimed invention, i.e., the device for correlating collected visible light to binder dosage and distribution on a composite-forming material. Neither Bolton et al nor DeVries et al teaches that the benzocyclobutene moiety could be omitted from the DeVries et al resin. The combined teachings of these references can not therefore be construed in any manner which would suggest Appellants' invention to one of ordinary skill in the art. Appellants' invention is not therefore rendered obvious by the combined teachings of DeVries et al and Bolton et al.

D. Claim 4 is not rendered obvious by the combined teachings of DeVries et al and Duclos et al.

DeVries et al has already been discussed and distinguished from the claimed invention. This discussion will not be repeated.

Duclos et al discloses a method and apparatus for detecting contamination in quartz sand. Duclos et al does not teach or suggest anything with respect to correlating the dosage and distribution of a reactive binder material in a composite-forming material during a process for the production of a composite material. Nor does Duclos et al teach or suggest that the benzocyclobutene moiety required by DeVries et al could be omitted. Duclos et al does not therefore teach Appellants' required correlation device which is "missing" from the teachings of DeVries et al nor does it rebut DeVries et al's teaching that a benzocyclobutene moiety is essential.

Neither DeVries et al nor Duclos et al teaches or suggests an apparatus for monitoring binder dosage and distribution on a composite-forming material during

production of the composite material which includes a device capable of correlating video images to binder dosage and distribution without the use of a benzocyclobutene moiety. Such correlation device and the ability to be used effectively without use of a specific fluorescent material such as the benzocyclobutene moiety of DeVries et al are key features of Appellants' invention.

References which do not teach or suggest key features of a claimed invention can not be combined in a manner which would render that claimed invention obvious. The teachings of DeVries et al and Duclos et al can not therefore be combined in a manner which would render Appellants' claimed invention obvious.

E. Claims 5, 8, 10 and 18 are not rendered obvious by the combined teachings of DeVries et al and Burchill.

DeVries et al has already been discussed and distinguished over the claimed invention. This discussion will not be repeated.

Burchill discloses an apparatus for detecting the presence of a modifier ingredient on a substrate surface such as PVC which has been applied to a cladding on a building. Burchill does not teach or suggest an apparatus in which distribution of a reactive material such as the binder required in Appellants' invention throughout a particulate material such as wood strands, etc. of the type useful in producing composite materials is determined. Further, Burchill does not teach that the benzocyclobutene moiety critical to the DeVries et al method could be omitted.

Neither DeVries et al nor Burchill teaches or suggests an apparatus or method for determining distribution and dosage of a reactive material such as a binder on particulate materials such as the composite-forming material required in Appellants' claimed invention. Neither of these references teaches or suggests an apparatus having or a method employing the device for correlating a video image with binder dosage and distribution which is required in Appellants' claimed invention. Neither of these references teaches or suggests that the benzocyclobutene moiety critical to the DeVries et al method could be omitted. The teachings of DeVries et al and Burchill can not therefore be combined in any manner which would render Appellants' claimed invention obvious.

F. Claims 16 and 17 are not rendered obvious by the combined teachings of DeVries et al and Barrera et al.

DeVries et al has already been discussed and distinguished from the claimed invention. This discussion will not be repeated.

Barrera et al discloses an interpenetrating polymer network composed of a continuous first phase made up of a flexible polymer and a second phase composed of a fluorescent dye and a polymer which enhances the durability of the fluorescent dye. Barrera et al does not teach or suggest anything with respect to an apparatus for monitoring dosage of a reactive material such as a binder on a composite-forming material. Barrera et al does not teach or suggest any device capable of correlating video images to binder dosage and distribution of the type which is required in Appellants' claimed invention. Barrera et al does not teach or suggest that the benzocyclobutene moiety of DeVries et al was unnecessary for the effective evaluation of a coating in accordance with the DeVries et al method.

Neither DeVries et al nor Barrera et al teaches or suggests an apparatus or a method for monitoring binder dosage and distribution of a composite-forming material even when no benzocyclobutene moiety is present. Neither of these references teaches or suggests the device for correlating a video image to binder dosage and distribution which is required in Appellants' claimed invention. The teachings of DeVries et al and Barrera et al can not therefore be combined in any manner which would render Appellants' claimed invention obvious.

G. Claim 21 is not rendered obvious by the combined teachings of DeVries et al and Krueger et al.

DeVries et al has already been discussed and distinguished from the present invention. This discussion will not be repeated.

Krueger et al discloses a method and apparatus for making aligned flake composite wood material. Krueger et al does not teach or suggest an apparatus for monitoring distribution and dosage of a reactive material in a composite-forming material. Krueger et al does not teach or suggest an apparatus having the device for correlating a video image to binder dosage and distribution which is required in Appellants' claimed invention. Krueger et al does not teach or suggest that the benzocyclobutene moiety required by DeVries et al could be omitted.

Neither DeVries et al nor Krueger et al teaches or suggests an apparatus having the device for correlating a video image to binder dosage and distribution which is required in Appellants' claimed invention. The teachings of these references can not therefore be combined in any manner which would render Appellants' claimed invention obvious.

IX. CONCLUSION

Appellants' Claim 1 is sufficiently definite that one skilled in the art could readily ascertain the scope of that claim with respect to element e).

DeVries et al does not teach or suggest a method or a device which is capable of determining the dosage and distribution of a reactive binder which has been applied to strands, particles or similar materials to produce a composite material during the production process. DeVries et al does teach that the presence of a benzocyclobutene moiety in the resin being evaluated by the reference method is critical. Appellants' invention does effectively determine the dosage and distribution of a reactive binder in a composite-forming composition even when no benzocyclobutene moiety is present in the composite-forming composition. DeVries et al does not therefore anticipate Appellants' claimed invention.

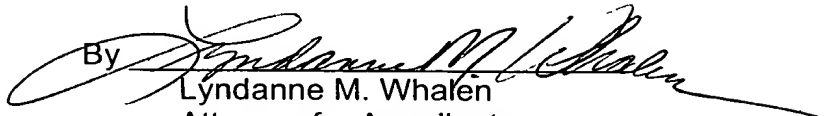
Each of the rejections designated herein as ISSUES C, D, E, F and G is based on the DeVries et al reference in combination with another reference. However, not one of the secondary references teaches or suggests the modifications of the DeVries et al method and apparatus which would be necessary to "arrive at" Appellants' claimed invention. Not one of the secondary references teaches or suggests that the benzocyclobutene moiety critical to the DeVries et al method could be omitted from the DeVries et al method.

In short, the secondary references do not supply the teachings which are "missing" from the teachings of DeVries et al necessary to establish a proper *prima facie* case of obviousness. Appellants' invention is not therefore rendered obvious by the combined teachings of DeVries et al with Bolton et al, or with Duclos et al, or with Burchill, or with Barrera et al or with Krueger et al.

Appellants therefore maintain that each of the Examiner's rejections is in error and respectfully request that each of these rejections be reversed and that Claims 1-21 be allowed.

Respectfully submitted,

ROBERT N. HUNT
TERRY L. THIEM

By 
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APPENDIX - CLAIMS ON APPEAL

1. An apparatus for determining binder dosage and distribution during the production of composite materials comprising:

a) a source of long wave ultraviolet light positioned so that ultraviolet waves emitted therefrom will come into contact with a composite-forming material to which binder has been applied,

b) a filter which blocks ultraviolet waves emitted from the UV light source and reflected by the composite-forming material to which binder has been applied but allows visible light waves emitted by fluorescence of the binder to pass,

c) a lens for imaging visible light onto a focal plane,

d) a video camera positioned at the focal plane of the lens which converts the visible light waves that have passed through the filter and the lens into an electrical signal, and

e) a device capable of correlating images received by the video camera to binder dosage and distribution on the composite-forming material to which binder has been applied contacted by the ultraviolet waves emitted by the UV light source.

2. The apparatus of Claim 1 in which the UV light source is an ultraviolet lamp.

3. The apparatus of Claim 1 in which the UV light source is 4 or more ultraviolet lamps.

4. The apparatus of Claim 1 in which the filter and the lens are positioned so that the visible light waves will pass through the filter before they pass through the lens.

5. The apparatus of Claim 1 in which the filter and the lens are positioned so that the visible light waves will pass through the lens before they pass through the filter.

6. The apparatus of Claim 1 in which the filter is composed of more than one filter.

7. The apparatus of Claim 6 in which the filter includes a filter capable of blocking ultraviolet waves.

8. The apparatus of Claim 6 in which the filter includes a long-pass filter having a cutoff wavelength between 400 and 600 nm.

9. The apparatus of Claim 6 in which the filter is a filter which has been selected to allow only the visible radiation emitted by the fluorescing binder to pass through.

10. The apparatus of Claim 6 in which the filter includes a near-infrared blocking filter.

11. The apparatus of Claim 6 in which the video camera is a color video camera.

12. The apparatus of Claim 11 in which the color video camera has color band pass filters that function as one or more of the filters in the filter.

13. The apparatus of Claim 1 in which the correlation means is capable of enhancing the images of the fluorescing binder and fluorescing lignocellulosic material.

14. A method for monitoring binder dosage and distribution during the production of composite materials comprising:

a) exposing a composite-forming material to which binder has been applied to ultraviolet waves for a period of time sufficient to cause the binder to fluoresce,

b) collecting visible waves emitted by the fluorescing binder,

c) passing the collected ultraviolet waves from step b) through a filter which blocks ultraviolet waves,

d) imaging the visible wave emissions of the fluorescing binder onto a video camera that converts the image to an electronic signal, and

e) relaying the electronic signal generated by the video camera in step d) to a device capable of correlating dosage and distribution of binder to the electronic signal received.

15. The method of Claim 14 in which the correlation means used in step e) is a computer programmed to correlate binder distribution and dosage with electronic signals generated by the video camera.

16. The method of Claim 14 in which the binder is a polyisocyanate-based material.

17. The method of Claim 14 in which the binder is a polyphenylene polymethylene polyisocyanate.

18. The method of Claim 14 in which the filter used in step c) also blocks near infrared waves.

19. The method of Claim 14 in which the filter used in step c) also blocks visible wave emissions from any fluorescing material other than the binder.

20. The method of Claim 14 in which the contrast between the fluorescence of the material to which binder was applied and the fluorescence of the binder is enhanced.

21. A process for the production of wood strand board comprising

a) applying a polyisocyanate to wood strands,

b) monitoring the polyisocyanate/wood strand material in accordance with the method of Claim 14 until the poly-isocyanate dosage and distribution are within a previously determined acceptable range,

c) forming the polyisocyanate/wood strand material into the desired shape or form, and

d) subjecting the polyisocyanate/wood strand material to curing conditions.